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TROPIC NETWORKS INC. DR. VICTORIA DONNELLY 135 MICHAEL COWPLAND DRIVE KANATA, ON K2M 2E9 CANADA			KIM, DAVID S	
			ART UNIT	PAPER NUMBER
			2633	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/990,366	<b>Applicant(s)</b> LIU ET AL.	
	<b>Examiner</b> David S. Kim	<b>Art Unit</b> 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>23 November 2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. **Claims 4 and 10** are objected to because of the following informalities:

In claim 4, line 1, "claim 2" is used where – claim 3 – may be intended. Otherwise, antecedent basis for "the low frequency dither signal" is lacking.

In claim 10, lines 2-3, "one of the some and all" is used where – one of the some or all – may be intended. See specification paragraph [0010].

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**O'Sullivan et al.**

3. **Claims 1-4, 6-9, and 13-14** are rejected under 35 U.S.C. 102(b) as being anticipated by O'Sullivan et al. (U.S. Patent No. 5,859,716, hereinafter "O'Sullivan").

**Regarding claim 1**, O'Sullivan discloses:

A method for monitoring performance of an optical network, comprising the steps of:  
marking an optical signal (col. 4, l. 52-62), traveling through a section of fiber, with a fiber identification (FID) tag which is unique (col. 4, l. 41-43) to the fiber section; and

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detecting (e.g. codes detector 67 in Fig. 3 is in each amplifier 10, 20, 30, and 40 in Fig. 1) the fiber identification tag at various locations in the network.

**Regarding claim 2**, O'Sullivan discloses:

A method as described in claim 1, wherein the step of marking comprises modulating the optical signal so that the fiber identification tag is encoded onto the optical signal (col. 4, l. 63-67).

**Regarding claim 3**, O'Sullivan discloses:

A method as described in claim 2, wherein the step of modulating comprises modulating the optical signal with the fiber identification tag, which is a low frequency dither signal (col. 4, l. 52-62).

**Regarding claim 4**, O'Sullivan discloses:

A method as described in claim 2, wherein the step of modulating the optical signal with the low frequency dither signal is performed by an amplitude modulation (col. 6, l. 18-23).

**Regarding claim 6**, O'Sullivan discloses:

A method as described in claim 4, wherein the step of modulating the optical signal with the low frequency dither signal comprises modulating with the low frequency dither tone whose frequency is unique (col. 6, l. 35-41) to the fiber section.

**Regarding claim 7**, O'Sullivan discloses:

A method as described in claim 1, wherein the step of detecting the fiber identification tag comprises detecting the tag at a network node (e.g. codes detector 67 in Fig. 3 is in the terminals 60 and 70 in Fig. 1).

**Regarding claim 8**, O'Sullivan discloses:

A method as described in claim 4, wherein the step of detecting comprises:  
tapping a portion of the optical signal; and

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determining one or more of the following parameters from the tapped portion of the optical signal:

- (a) frequency of the FID signal;
- (b) depth of modulation (col. 4, l. 59-62) of the optical signal introduced by the FID signal; and
- (c) combined power of FID signals at the FID frequency.

**Regarding claim 9**, O'Sullivan discloses:

A method as described in claim 1, wherein the step of marking the optical signal is performed so that selected FID tags are accumulated (Fig. 1, col. 4, l. 52-62) in the optical signal as the signal travels in the network.

**Regarding claim 13**, claim 13 is a system claim that corresponds to method claim 1. Therefore, the recited steps in method claim 1 read on the corresponding means in system claims 13.

**Regarding claim 14**, O'Sullivan discloses:

A system as described in claim 13, wherein the means for marking comprises an encoder (Fig. 2, signal 55 applied to laser source 9) for encoding a low frequency dither signal onto the optical signal, and the means for detecting comprises a decoder (Fig. 3) for decoding said low frequency dither signal.

#### **Fatehi et al. '581**

4. **Claims 1-10 and 13-15** are rejected under 35 U.S.C. 102(e) as being anticipated by Fatehi et al. (U.S. Patent No. 6,600,581 B1, hereinafter "Fatehi '581"), which incorporates Fatehi et al. (U.S. Patent No. 5,745,274, hereinafter "Fatehi '274") by reference.

**Regarding claim 1**, Fatehi '581 discloses:

A method for monitoring performance of an optical network, comprising the steps of:

marking an optical signal (Tag Read/Write Elements 201 in Fig. 1), traveling through a section of fiber (col. 4, l. 13-18), with a fiber identification (FID) tag which is unique (e.g. message field 404 in Fig. 4) to the fiber section; and

detecting (e.g. Tag Read/Write Elements 211 in Fig. 1) the fiber identification tag at various locations in the network.

**Regarding claim 2, Fatehi '581 discloses:**

A method as described in claim 1, wherein the step of marking comprises modulating the optical signal so that the fiber identification tag is encoded onto the optical signal (col. 6, l. 27-55).

**Regarding claim 3, Fatehi '581 discloses:**

A method as described in claim 2, wherein the step of modulating comprises modulating the optical signal with the fiber identification tag, which is a low frequency dither signal (col. 5, l. 63 – col. 6, l. 11).

**Regarding claim 4, Fatehi '581 discloses:**

A method as described in claim 2, wherein the step of modulating the optical signal with the low frequency dither signal is performed by an amplitude modulation (col. 6, l. 44-55).

**Regarding claim 5, Fatehi '581 discloses:**

A method as described in claim 2, wherein the step of modulating comprises one of the following types of modulation: frequency modulation, phase modulation and polarization modulation (Fatehi '274, col. 2, l. 16-21).

**Regarding claim 6, Fatehi '581 discloses:**

A method as described in claim 4, wherein the step of modulating the optical signal with the low frequency dither signal comprises modulating with the low frequency dither tone whose frequency is unique (col. 5, l. 63 – col. 6, l. 11) to the fiber section.

**Regarding claim 7, Fatehi '581 discloses:**

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A method as described in claim 1, wherein the step of detecting the fiber identification tag comprises detecting the tag at a network node (cross connect 200 in Fig. 1, col. 1, l. 35-40).

**Regarding claim 8**, Fatehi '581 discloses:

A method as described in claim 4, wherein the step of detecting comprises:  
tapping a portion of the optical signal (Fatehi '274, taps in Figs. 1-2); and  
determining one or more of the following parameters from the tapped portion of the optical signal:

- (a) frequency of the FID signal;
- (b) depth of modulation (Fatehi '274, col. 3, l. 53-57) of the optical signal introduced by the FID signal; and
- (c) combined power of FID signals at the FID frequency.

**Regarding claim 9**, Fatehi '581 discloses:

A method as described in claim 1, wherein the step of marking the optical signal is performed so that selected FID tags are accumulated (Fatehi '274, multiple tags in Fig. 3) in the optical signal as the signal travels in the network.

**Regarding claim 10**, Fatehi '581 discloses:

A method as described in claim 1, wherein the step of marking the optical signal is performed so that one of the some and all of the previously introduced FID tags are removed (e.g. Fig. 3B).

**Regarding claim 13**, claim 13 is a system claim that corresponds to method claim 1. Therefore, the recited steps in method claim 1 read on the corresponding means in system claims 13.

**Regarding claim 14**, Fatehi '581 discloses:

A system as described in claim 13, wherein the means for marking comprises an encoder (Figs. 3A and 3C) for encoding a low frequency dither signal onto the optical signal, and the means for detecting comprises a decoder (Fig. 3B) for decoding said low frequency dither signal.

**Regarding claim 15**, Fatehi '581 discloses:

A system as described in claim 14, wherein the encoder comprises one of the following: high-speed e-VOA (variable optical attenuator), Mach-Zehnder modulator and electro-absorption modulator (Fatehi '274, col. 3, l. 32-37).

#### **Anderson**

5. **Claims 16-19** are rejected under 35 U.S.C. 102(b) as being anticipated by Anderson (U.S. Patent No. 6,025,949).

**Regarding claim 16**, Anderson discloses:

A method for monitoring performance of an optical network, comprising the steps of:  
marking an optical signal (e.g. signal through optical path 5 in Fig. 1), traveling through a section (e.g. the section around repeater 10 in Fig. 1) of fiber in a bundle (e.g. optical fibers 32-35 in Fig. 2) of fibers, with a bundle identification (BID) tag ("frequency" in col. 3, l. 6-16) which is unique to the bundle section; and

detecting the bundle identification tag at various locations (terminals 2 and 3 in Fig. 1) in the network.

**Regarding claim 17**, Anderson discloses:

A method as described in claim 16, wherein the step of marking comprises modulating the optical signal with a low frequency dither signal (col. 3, l. 6-16), whose frequency is unique to the bundle section.



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**Regarding claim 18**, claim 18 is a system claim that corresponds to method claim 16. Therefore, the recited steps in method claim 16 read on the corresponding means in system claims 18.

**Regarding claim 19**, Anderson discloses:

A system as described in claim 18, wherein the means for marking comprises an encoder (Fig. 2) for encoding a low frequency dither signal onto the optical signal, and the means for detecting comprises a decoder (Fig. 3) for decoding said low frequency dither signal.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**O'Sullivan as primary reference**

8. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Sullivan in view of Fatehi '274.

**Regarding claim 5**, O'Sullivan does not expressly disclose:

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A method as described in claim 2, wherein the step of modulating comprises one the following types of modulation: frequency modulation, phase modulation and polarization modulation.

Rather, the method of O'Sullivan employs amplitude modulation to tag an optical signal (col. 6, l. 18-23). However, it is known that other types of modulation are available for modulating tags onto optical signals. Fatehi '274 teaches various types of modulation for modulating tags onto optical signals: amplitude, phase, frequency, and polarization (col. 2, l. 16-21). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ other types of modulation, such as modulation of phase, frequency, or polarization, as disclosed by Fatehi '274. One of ordinary skill in the art would have been motivated to do this to provide design flexibility to accommodate for various constraints on costs, equipment, expertise, and the like.

9. **Claims 10 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Sullivan in view of Heismann et al. ("Signal tracking and performance monitoring in multi-wavelength optical networks," hereinafter "Heismann").

**Regarding claim 10**, O'Sullivan does not expressly disclose:

A method as described in claim 1, wherein the step of marking the optical signal is performed so that one of the some and all of the previously introduced FID tags are removed.

Heismann teaches a related method of monitoring performance of an optical network, comprising such a step of marking and tag removal (p. 3.49, Fig. 3). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ tag removal in the method of O'Sullivan. One of ordinary skill in the art would have been motivated to do this to refresh the tags as they pass through the network (Heismann, p. 3.49, 1<sup>st</sup> full paragraph), thus avoiding the situation where these tags become unintentionally undetectable.

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**Regarding claim 15**, O'Sullivan does not expressly disclose:

A system as described in claim 14, wherein the encoder comprises one of the following: high-speed e-VOA (variable optical attenuator), Mach-Zehnder modulator and electro-absorption modulator.

Rather, the encoder of O'Sullivan appears to employ a kind of modulation scheme to tag an optical signal (signal 55 applied to laser source 9 in Fig. 2). However, other modulation schemes to tag optical signals are known. Heismann teaches two modulation schemes (Fig. 2(a), 12-kHz tone and 10-kHz tone) to tag optical signals. One is similar to the scheme of O'Sullivan (Heismann, Fig. 2(a), 10-kHz tone). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ another kind of modulation scheme, such as the other modulation scheme of Heismann (Fig. 2(a), 12-kHz tone via Mach-Zehnder modulator). One of ordinary skill in the art would have been motivated to do this to provide design flexibility to accommodate for various constraints on costs, equipment, expertise, and the like.

10. **Claims 11-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Sullivan.

**Regarding claim 11**, O'Sullivan discloses:

A method of detecting a fiber failure in an optical network, comprising the steps of:  
monitoring performance of an optical network as described in claim 1 (see treatment of claim 1 under O'Sullivan above).

O'Sullivan does not expressly disclose:

indicating the possibility of fiber failure for the fiber section whose fiber identification tag is not present.

However, O'Sullivan teaches that its invention is related to determining cable/fiber breaks (col. 1, l. 13-15) and isolating such breaks (col. 2, l. 34-36), also commonly known as fiber

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failures. Also, note that O'Sullivan teaches that its invention is used for declaring losses of signals (col. 4, l. 4-15). It is intuitively obvious that a loss of an optical signal could also include the loss of fiber identification tags that were on said lost optical signal. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to correlate such losses of signals with the possibility of fiber failure for the fiber section whose fiber identification tag is not present. One of ordinary skill in the art would have been motivated to do this since O'Sullivan teaches that a loss of signal alarm (also correlating to a loss of fiber identification tag(s)) is important for determining cable/fiber breaks (col. 1, l. 13-15), or fiber failures.

**Regarding claim 12**, O'Sullivan discloses:

A method as described in claim 6, further comprising the steps of:

measuring power levels of FID tones at FID frequencies (col. 7, l. 55-60); and

indicating the possibility of one or more of the following:

a fiber section failure if the FID tone for the fiber section is not present (see treatment of claim 11 under O'Sullivan above);

an amplifier failure if power levels of combined FID tones at different frequencies decrease substantially uniformly;

a transponder failure if the power level of the corresponding FID tone decreases provided that no channels are being dropped from the respective network node; and

adding or dropping wavelength channels to fiber sections if power levels of the corresponding FID tones change.

11. **Claims 16-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Sullivan in view of Anderson.

**Regarding claim 16**, O'Sullivan discloses:

A method for monitoring performance of an optical network, comprising the steps of:

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marking an optical signal (col. 4, l. 52-62), traveling through a section of fiber, with a fiber identification (FID) tag which is unique (col. 4, l. 41-43) to the fiber section; and

detecting (e.g. codes detector 67 in Fig. 3 is in each amplifier 10, 20, 30, and 40 in Fig. 1) the fiber identification tag at various locations in the network.

O'Sullivan does not expressly disclose:

said section of fiber being in a bundle of fibers,

marking said optical signal with a *bundle* identification tag (BID) which is unique to the *bundle section*; and

detecting the *bundle* identification tag at various locations in the network.

Rather, the teachings of O'Sullivan are primarily directed toward a single line of fiber (Figs. 1-2). However, it is extremely common to lay lines of fiber in bundles of fiber. Anderson teaches an example of an optical path comprising multiple lines of fiber, a bundle of fiber (optical paths 4 and 5 in Fig. 1, each comprising more than one line of fiber). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate a bundle of fibers in the method of O'Sullivan, extending the FID teachings of O'Sullivan to BID teachings. One of ordinary skill in the art would have been motivated to do this since bundles of fiber conventionally provide the benefits of increased transmission bandwidth, separate paths for optical signals for reduced crosstalk, and redundant optical paths for fault recovery schemes.

**Regarding claim 17**, O'Sullivan in view of Anderson discloses:

A method as described in claim 16, wherein the step of marking comprises modulating the optical signal with a low frequency dither signal (O'Sullivan in view of Anderson, col. 4, l. 63-67 extended to BID), whose frequency is unique to the bundle section.

**Regarding claim 18**, claim 18 is a system claim that corresponds to method claim 16. Therefore, the recited steps in method claim 16 read on the corresponding means in system claims 18.

**Regarding claim 19**, O'Sullivan in view of Anderson discloses:

A system as described in claim 18, wherein the means for marking comprises an encoder (Fig. 2, signal 55 applied to laser source 9) for encoding a low frequency dither signal onto the optical signal, and the means for detecting comprises a decoder (Fig. 3) for decoding said low frequency dither signal.

#### **Fatehi '581 as primary reference**

12. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fatehi '581.

**Regarding claim 11**, Fatehi '581 discloses:

A method of detecting a fiber failure an optical network, comprising the steps of:  
monitoring performance of an optical network as described in claim 1 (see treatment of claim 1 under Fatehi '581 above).

Fatehi '581 does not expressly disclose:

indicating the possibility of fiber failure for the fiber section whose fiber identification tag is not present.

However, Fatehi '581 teaches that its invention is related to verifying connections (abstract, col. 7, l. 50 – col. 9, l. 11). An intuitively obvious cause of an unverified connection is the loss of an optical signal. Furthermore, a loss of an optical signal could also include the loss of fiber identification tags that were on said lost optical signal. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to correlate unverified connections with the possibility of fiber failure for the fiber section whose fiber identification tag

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is not present. One of ordinary skill in the art would have been motivated to do this since detecting and locating failures immediately after they occur allow for quick repairs (Fatehi '274, col. 1, l. 29-32)

### **Heismann as primary reference**

13. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Heismann in view of O'Sullivan.

**Regarding claim 20**, Heismann discloses:

A method for determining a topology of an optical network, comprising the steps of:  
marking an optical signal with a channel identification (CID) tag (section "SIGNAL IDENTIFICATION") which is unique to the optical signal;  
and detecting (p. 3.48, 1<sup>st</sup> paragraph) the tag at various locations in the network, thereby determining a path of said optical signal in the network.

Heismann does not expressly disclose (but O'Sullivan does):

marking said optical signal (col. 4, l. 52-62), traveling through a fiber section, with a fiber identification (FID) tag which is unique (col. 4, l. 41-43) to the fiber section; and  
detecting the tag (e.g. codes detector 67 in Fig. 3 is in each amplifier 10, 20, 30, and 40 in Fig. 1) at various locations in the network, thereby determining a path (the codes indicate a path taken by the optical signal) of said optical signal in the network.

However, O'Sullivan teaches these steps as part of a method for monitoring performance of optical transmission systems employing optical amplifiers. Heismann also discusses optical transmission systems employing optical amplifiers (section "INTRODUCTION"). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to then apply the performance monitoring method of O'Sullivan to the method of Heismann. One

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of ordinary skill in the art would have been motivated to do this to troubleshoot the system comprising optical amplifiers (O'Sullivan, abstract).

14. **Claim 21** is rejected under 35 U.S.C. 103(a) as being unpatentable over Heismann in view of O'Sullivan as applied to claim 20 above, and further in view of Anderson.

**Regarding claim 21**, Heismann in view of O'Sullivan does not expressly disclose:

A method as described in claim 20, further comprising the step of marking said optical signal, traveling through a fiber section in a bundle section, with a bundle identification (BID) tag which is unique to the bundle section, the step of marking with the BID tag being performed before the step of detecting.

Rather, the teachings of Heismann and O'Sullivan are primarily directed toward single lines of fiber (Figs. 1-2). However, it is extremely common to lay lines of fiber in bundles of fiber. Anderson teaches an example of an optical path comprising multiple lines of fiber, a bundle of fiber (optical paths 4 and 5 in Fig. 1, each comprising more than one line of fiber). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate a bundle of fibers in the method of Heismann in view of O'Sullivan, extending the FID teachings of Heismann in view of O'Sullivan to BID teachings. One of ordinary skill in the art would have been motivated to do this since bundles of fiber conventionally provide the benefits of increased transmission bandwidth, separate paths for optical signals for reduced crosstalk, and redundant optical paths for fault recovery schemes.

### ***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hamada and Lee et al. are cited to show methods of marking an optical signal with fiber identification tags.



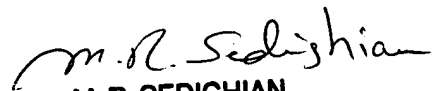
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DSK

  
**M. R. SEDIGHIAN**  
**PRIMARY EXAMINER**